ist to apply the results of the general method to practical cases. Liharzik in Vienna measured twenty children regularly from the day of their birth to their eighth year, and two hundred boys from their eighth until their fourteenth year. The first to make an investigation of this kind with special reference to school work was Dr. Wretlind, who measured the increases of children during vacations and during the term. In Denmark Dr. Vahl made semi-annual weighings of the girls at Jägerspris. He arrived at the conclusion that weighings of this kind are the only means of controlling satisfactorily the sanitary conditions of school children. The studies of R. Malling-Hansen indicate that the development depends upon climatic conditions, in so far as the winter seems to cause a retarding influence. If this is true, schools in northern countries ought to have longer summer vacations than schools in southern countries, in order to make up for the lesser growth during the cold season. An important investigation of this character has also been made in Germany by Dr. Landsberger, in Posen, who followed the growth of one hundred and four children through a period of five years.

Most of these investigations deal with the growth of the whole body; they refer only incidentally to the growth of certain parts of the body. Valuable material on this point is, however, contained in Dr. Landsberger's investigation. He found, for instance, that during school age the diameters of the head change only very slightly, while the growth of the body as a whole is very rapid. The next step to be taken in researches of this kind will be the study of the growth of individual parts of the body in connection with their functions. The growth of the hand, together with its increase in strength, ought, for instance, to be studied. The remarkable changes in the curvature of the skull, the relative development of face and head, in short, the development of each part of the body, ought to be made the subject of most searching and careful inquiry. The results to be obtained from investigations of this kind will undoubtedly teach us how to develop the faculties of children each at its proper time.

ISOLATION OF A CHOLERA TOXINE.

HERMANN SCHOLL (*Berlin. klin. Woch.*, Oct. 13, 1890) communicates an interesting paper giving the results of some experiments with a poisonous body isolated from cultivations of the cholera bacillus. According to the *British Medical Journal*, he thinks it curious that in all previous investigations on the nature of the cholera, toxine cultivations should have been used which had been grown in the presence of air; whereas, in his opinion, in order to imitate the conditions under which the cholera bacillus grows in the human intestine, the most essential point is that the culture be grown in the absence of air. In this assumption he follows Hueppe and Cartwright Wood, who, he considers, have satisfactorily shown that the cholera bacilli grow in the small intestine in the absence of oxygen, and that their extreme virulence or rapidity of poison production depends chiefly on this anaerobic growth. Other observers, among whom Petri may be cited, think that this point requires more rigorous proof than has yet been afforded.

To obtain this anaerobic growth, the author used the method introduced by Hueppe of growing the bacilli in raw eggs, by which means he holds that oxygen is completely excluded. The inoculated eggs were kept for eighteen days at a temperature of 36° C. When opened the contents were found to give off a very powerful smell of sulphuretted hydrogen, differing in this from cultures grown in air. He describes the white of the egg at this period as being fluid and watery, the yolk firmer in consistence and black in color. In order to test the toxicity of the egg contents, five cubic centimetres of the fluid part were injected into the peritoneal cavity of a guinea-pig. The animal at first showed signs of paralysis, then convulsive movements, and died at the end of forty minutes. This proved that the fluid egg albumen was very poisonous.

The author then proceeds to describe his method of isolating the poison. Briefly, it is as follows. The fluid part of the egg contents, which amounted to 150 cubic centimetres, was dropped into ten times its volume of absolute alcohol. The white precipitate thrown down was collected and digested with 200 cubic centimetres of water at 40° C. The effect of this was to dissolve only a very small quantity of the precipitate, which was then removed by filtration. Eight cubic centimetres of the transparent filtrate were then injected into the peritoneal cavity of a guinea pig, and caused death in one minute and a half. This fluid entirely lost its poisonous properties on being boiled in the steam sterilizer for half an hour, while a short heating to 75° C. had no such effect. On the other hand, when placed at 40° C. *in vacuo*, over chloride of lime, the fluid was found next day to be completely inert.

The author then subjected the poison to the usual chemical tests, and came to the conclusion that it was no ptomaine, but a peptone, differing, however, from the toxo-peptone isolated by Petri from aerobically grown cultivations. This peptone could be obtained in a solid form by dropping the watery solution into eight to ten times its volume of a mixture of the ether and alcohol, rendered faintly acid by acetic acid. The resulting precipitate was found to be insoluble in pure water, but soluble on the addition of an alkali. After repeating this precipitation and resolution several times, pure ether was substituted for the mixture of ether and alcohol, and the peptone obtained after evaporation as a white bulky substance. A very small quantity of this dissolved in water was then injected into the peritoneal cavity of a guinea-pig. The animal at once became totally paralyzed. After half an hour convulsive movements of the head and extremities set in, and at the end of five hours the guinea-pig died. The author concludes, as the result of his experiments, (1) that the poisonous peptone, elaborated by the cholera bacilli under conditions of anaerobiosis from the albumen of the egg, is different from the toxo-peptone of Petri, since the latter was not decomposed on boiling, while the former was; (2) that this cholera pepto-toxine is much more poisonous than the toxines found by Brieger and Petri in cultures grown under aerobic conditions, since the poison obtainable from a single egg was capable of killing ten guinea-pigs in the space of ten minutes; (3) that these experiments are in favor of the contention of Hueppe and Wood that the cholera bacilli, when grown anaerobically, form a greater quantity of, and a more powerful, poison than when grown aerobically.

NOTES AND NEWS.

THE *Pedagogical Seminary* says that in Darmstadt and other large German cities pot-plants are given to school children who live in tenements. They are usually three in number and of the same size, with printed directions how to care for them. At the end of a year are exhibitions and prizes.

— At a meeting of the Royal Society, London, on June 4, the following gentlemen were duly elected fellows of the society: William Anderson, Professor Frederick Orpen Bower, Sir John Conroy, Professor Daniel John Cunningham, Dr. George M. Dawson, Edwin Bailey Elliott, Professor Percy Faraday Frankland, Percy C. Gilchrist, Dr. William Dobinson Halliburton, Oliver Heaviside, John Edward Marr, Ludwig Mond, William Napier Shaw, Professor Silvanus P. Thompson, and Captain Thomas Henry Tizard.

— According to the *Engineering and Mining Journal*, Professor Salisbury of the United States Geological Survey has made arrangements with Professor Smock, in charge of the Geological Survey of New Jersey, to undertake geological studies of the formation of the surface in sections of New Jersey, with especial reference to the glacial drift. He will begin work next month, and his study will be confined to Middlesex, Union, and Essex Counties during the summer. Monmouth and Mercer Counties may also be visited.